MODULE P LANGUAGES AND IDES · P3

Translators: compilers and interpreters: mark scheme

20 marks · Cambridge 0478 syllabus 4.2.3 (operation of a compiler and an interpreter), 4.2.4 (advantages and disadvantages)

How to use. One mark per creditworthy point up to the maximum shown. **/** separates alternative words; **//** separates alternative answers. Words in (brackets) are not needed for the mark. Credit any other valid answer that shows the same understanding.

QUESTION	ANSWER	MARKS	GUIDANCE
1(a) 0478 4.2.3	Compiler Interpreter	**2**	Either order. Do not accept assembler (it translates assembly language, not a high-level language).
2(a) 0478 4.2.3	Produces an executable file: Compiler Translates one line of code, executes it, then moves on to the next line: Interpreter Translates high-level language into machine code: Both Gives one error report listing every error it detects in the code: Compiler Halts when it reaches an error, then continues from that point once the error is corrected: Interpreter	**5**	One mark for each correct row. More than one tick in a row: no mark for that row.
3(a) 0478 4.2.4	Writing and testing: Interpreter (1) Reason, any one from: Errors are reported as soon as they are found // at the line where they occur Execution stops at the error, so it can be corrected and the program continued from that point Code can be run / tested straight away // without translating the whole program each time a change is made Easier to debug // find and correct errors Final program: Compiler (1) Reason, any one from: Produces an executable file (to load onto the arms) The arms do not need a translator to run the program The program is translated once // not translated each time it runs // runs faster The source code is not supplied with the program // the source code is protected	**4**	A reason can only be credited if the translator in that row is correct. Do not accept "faster" with no reference to execution / running (e.g. "faster to translate").

QUESTION	ANSWER	MARKS	GUIDANCE
4(a) 0478 4.2.3	Any three from: Lines 01 to 04 are translated and executed // "Greenhouse log started" is output and a reading is input Execution stops at line 05 // when the first error is found The error on line 05 is reported / displayed The error on line 07 is not reported (yet) // it is only found after line 05 is corrected and execution continues	**3**	max 3. Do not accept "both errors are reported together".
4(b) 0478 4.2.3	Any two from: The whole code is translated (before any of it is executed) // none of the program is executed An error report is produced for the whole code The report lists both errors // lines 05 and 07 No executable file is produced (until the errors are corrected)	**2**	max 2. Do not accept "it stops at line 05".
5(a) 0478 4.2.4	One mark for each advantage, one mark for its expansion, for two advantages: The shops do not need a translator / interpreter (1) ... // only the executable file is needed to run the program ... so it is simpler to install / run (1) The source code is not supplied (1) ... so the shops / others cannot see / copy / change the company's code (1) The program has already been translated (1) ... so it is not translated each time it runs // it executes faster (1)	**4**	max 4. Expansion only creditable if it matches its advantage. Do not accept "more secure" or "faster" alone.

Total: 20 marks